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PATENT APPLICATION
ATTORNEY DOCKET NO. 217140

(91)

Claims

- [c1] A sub-sea controller (31) located under the sea level for managing a plurality of tools in a sub-sea well installation, the sub-sea controller (31) comprising:
downloading means to download an application module (35_a) to the sub-sea controller (31); and
a virtual machine (36) to execute the downloaded application module (35_a).
- [c2] The sub-sea controller (412) according to claim 1, further comprising:
a native application (47) implemented within the sub-sea controller (412); and
a native interface (48) implemented within the sub-sea controller (412), the native interface (48) enabling the application module (45_a) to access the native application (47).
- [c3] The sub-sea controller (412) according to claim 2, wherein
the native interface (48) enables the native application (47) to access the application module (45_a).
- [c4] The sub-sea controller (412) according to any one of claims 2 or 3, further comprising:
a native memory wherein the native application (47) is executed; and
a defined memory wherein the application module (45_a) is executed, the defined memory being distinct from the native memory.
- [c5] The sub-sea controller (412) according to any one of claims 2 to 4 further comprising:
a protection register, the protection register authorizing an access to the native application only if a key code is written hereto;
accessing means to access the protection register from the application module.

- [e6] The sub-sea controller (45_n) according to any one of claims 1 to 5, wherein the application module (45_n) contains a driver for a tool.
- [e7] A sub-sea well installation a sub-sea controller (31) according to any one of claims 1 to 6.
- [e8] A method for updating a software of a sub-sea controller (31) located under the sea level, the sub-sea controller (31) managing a plurality of tools in a sub-sea well, the method comprising:
downloading an application module (35_n) into the sub-sea controller (31); and
executing the application module (35_n) using a virtual machine (36) implemented within the sub-sea controller (31).
- [e9] The method according to claim 8, further comprising:
executing a native application (47) of the sub-sea controller (42) within the sub-sea controller (412);
executing a native interface within the sub-sea controller (412);
accessing the native interface from the native application (47) to exchange data with the application module (45_n).
- [e10] The method according to claim 8, further comprising:
executing a native application (47) of the sub-sea controller (42) within the sub-sea controller (412);
executing a native interface within the sub-sea controller (412);
accessing the native interface from the application module (45_n) to exchange data with the native application (47).
- [e11] The method according to any one of claims 9 or 10, wherein the downloading and the executing of the application module (45_n) are performed without interrupting an executing of the native application of the sub-sea controller (412).

- [c12] The method according to any one of claims 9 to 11, further comprising:
executing the application module (45_e) in a defined memory;
executing the native application (45_n) in a native memory;
wherein the defined memory is distinct from the native memory.
- [c13] The method according to anyone of claims 8 to 12 wherein the application module (45_e) contains a driver for a tool.